

Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 16.

April, 1914.

No. 184.

SOME ANNUAL HALOPHYTIC ASTERS OF THE MARITIME PROVINCES.

M. L. FERNALD.

(Plate 109.)

WHEN the genus *Aster* was worked over for the seventh edition of Gray's Manual the three annual species included were noted as occurring on the marshes or saline sands of the lower River or the Gulf of St. Lawrence, two of the records based upon collections by the present writer, and one upon a specimen from Professor John Macoun. The three species, as then treated, were *A. subulatus* Michx., the continuous northeastward range of which stops at the New Hampshire coast, but which is represented by a plant discovered in 1902 by Mr. Emile F. Williams and the writer on the saline shores of Nepisiguit Bay, an arm of the Baie des Chaleurs in northeastern New Brunswick; *A. angustus* (Lindl.) T. & G., a plant of the Great Plains of western North America and of salt plains of Siberia and Afghanistan, which has an isolated station on the shores of the St. Lawrence at Cacouna, Temiscouata Co., Quebec; and *A. frondosus* (Nutt.) T. & G. of alkaline spots among the Rocky Mountains, with which was identified a specimen collected in 1888 by Professor John Macoun at Brackley Point, Prince Edward Island, and sent to the Gray Herbarium as *A. subulatus*.

During the summer of 1912, while botanizing about the Gulf of St. Lawrence, Messrs. Bayard Long, Harold St. John and the writer made a special point of collecting adequate material of the Prince Edward Island plant. It was found to be somewhat general in brackish sands

of the "North Shore," i. e. the outer or Gulf shore of the island, at least from Tignish to Grand Tracadie, while a seemingly identical plant was found on brackish shores at Étang du Nord, at the southern end of Grindstone Island in the Magdalen Island group; and a closely related but obviously distinct plant was found in great profusion covering the damp brackish sands at Grande Entrée near the northern end of the Magdalen Islands.

Upon critically studying this material it was quickly apparent that the Prince Edward Island plant, which had been originally distributed as *Aster subulatus* and subsequently referred to *A. frondosus*, could have no specific connection with either, for it has quite rayless heads like those of the unique *A. angustus*, and in its very foliaceous involucre it is unlike any described species. It was also apparent that the little plant so abundant at the northern end of the Magdalen Islands differed in some pronounced varietal characteristics from the plant of Grindstone Island and of Prince Edward Island.

In the course of this study of the annual Asters from Prince Edward Island and the Magdalen Islands, the plant from northeastern New Brunswick, which had been referred to *A. subulatus*, was also reexamined and found to differ in certain important points from the plant of our Atlantic coast. It was consequently gratifying that, in his explorations of the coastal sands of eastern New Brunswick during the late summer and autumn of 1913, Mr. Sidney F. Blake was able to secure a collection of mature material of the so-called *A. subulatus* from the shores of Nepisiguit Bay and thus to reinforce the characters already noted in the rather immature material of Williams & Fernald. And it was especially interesting that, upon the marshes of the Tracadie Lagoon of northeastern New Brunswick, Mr. Blake should also find a third area of the little rayless species already known from the islands in the Gulf; but the most notable point about the plant of the Tracadie Lagoon is that, while clearly belonging specifically with the others, it should show in its foliage and involucre characters almost exactly intermediate between the plant of the Prince Edward Island sands and the extreme variety which covers the sands of Grande Entrée, near the northern end of the Magdalen Islands.

The third species of this remarkable group of annual Asters of the St. Lawrence shores, the plant identified with *Aster angustus*, has not, so far as the writer is aware, been collected since he and Professor J. F. Collins found over-ripe material at the border of a salt marsh at Ca-

couna in 1904. But of the peculiar plants from the Gulf of St. Lawrence we now have an abundance of material; and it is clear that the rayless one is distinct from the species with which the earlier and inadequate collection was placed and that the other, from Nepisiguit Bay, is a pronounced variety of the southern *A. subulatus*.

The rayless plant may be called

ASTER (CONYZOPSIS) **laurentianus**, n. sp., planta annua ubique carnosae 3–25 cm. alta, caule subsimplici vel cum ramis brevibus axillaribus racemosis 1-capitatis instructo vel interdum ramis elongatis; foliis lineari-spathulatis vel -lanceolatis obtusis vel acutiusculis mucronatis integris 2–6 cm. longis 2–7 mm. latis; involucri hemispherico-campanulato, bracteis 2–3-seriatis plerumque foliaceis carnosae lanceolatis lineari-spathulatis vel lineari-oblongis acuminatis mucronatis plerumque subaequalibus 5–8 mm. longis, exterioribus 3–5 valde elongatis 8–18 mm. longis 1–2 mm. latis; corollis exterioribus numerosis filiformibus eligulatis stylo brevioribus, corollis centralibus paucis filiformibus limbo campanulato 4–5-fido flavescens stigmata purpurascens subaequantibus; achaeniis pilosis.

Annual, glabrous throughout, fleshy, 3–25 cm. high; the stem subsimple or with short axillary racemose 1-headed branches or occasionally with elongate branches: leaves linear-spatulate or -lanceolate, obtuse or acutish, mucronate, entire, 2–6 cm. long, 2–7 mm. wide: involucre hemispherical-campanulate: the bracts in 2–3 series, mostly foliaceous and fleshy, lanceolate, linear-spatulate or linear-oblong, acuminate, mucronate, mostly subequal, 5–8 mm. long; the exterior 3–5 very elongate, 8–18 mm. long, 1–2 mm. wide: the outer corollas numerous, filiform, without rays, shorter than the style; central corollas few, filiform, with a 4–5-toothed campanulate limb, yellowish, about equaling the purplish stigmas: achenes pilose.—PRINCE EDWARD ISLAND: damp sand back of the strand, Tignish, August 6, 1912 (barely in anthesis), *Fernald, Long & St. John*, no. 8163; salt marshes, Brackley Point, September 5, 1888, *J. Macoun* (distributed as *A. subulatus*); damp brackish sands, Brackley Point, August 31, 1912, *Fernald, Long & St. John*, no. 8166 (TYPE in Gray Herb.); wet brackish sand, Grand Tracadie, August 31, 1912, *Fernald, Long & St. John*, no. 8167. MAGDALEN ISLANDS: wet brackish sand or mud at the margin of a pond southwest of Étang du Nord village, Grindstone Island, August 15, 1912, *Fernald, Long & St. John*, no. 8164. Figs. 1–3.

Var. **magdalenensis**, n. var., humilis 3–5 cm. altus valde carnosus; foliis spathulatis apice rotundatis vel obtusis; bracteis exterioribus 5–11 haud elongatis spathulatis vel oblongis vel anguste ellipticis plerumque obtusis 8–10 mm. longis 2–4 mm. latis.

Low, 3–5 cm. high, very fleshy: leaves spatulate, rounded or obtuse at apex: outer bracts 5–11, not at all elongated, spatulate, oblong or

narrowly elliptic, mostly obtuse, 8–10 mm. long, 2–4 mm. wide.—MAGDALEN ISLANDS: damp brackish sandy beach, Grande Entrée, Coffin Island, August 19, 1912, *Fernald, Long & St. John*, no. 8165 (TYPE in Gray Herb.). Fig. 4.

Var. **contiguus**, n. var., humilis 2–13 cm. altus; foliis spatulatis apice rotundatis vel obtusis: bracteis exterioribus 5–11 lineari-oblongis haud vel rare elongatis acutis vel acutiusculis 5–10 mm. longis 1–2 mm. latis.

Low, 2–13 cm. high: leaves spatulate, rounded or obtuse at apex: outer bracts 8–11, linear-oblong, not at all or rarely elongated, acute or acutish, 5–10 mm. long, 1–2 mm. wide.—NEW BRUNSWICK: drier spots in marsh, Tracadie, Gloucester Co., September 10, 1913, *S. F. Blake*, no. 5645 (TYPE in Gray Herb.). Fig. 5.

In its rayless marginal flowers (fig. 2) *Aster laurentianus* is nearest related to *A. angustus*, which has the linear-attenuate leaves and the very slender involucre bracts ciliate. Though formerly confused with *A. frondosus*, *A. laurentianus* has less affinity with that species than with *A. angustus*. In *A. frondosus* the ligule is well developed and the involucre has its outer series of bracts successively shorter than the inner, while in the rayless *A. laurentianus* the outer series are successively longer.

Aster laurentianus belongs to a peculiar little group of annual species (§ *Conyzopsis*) widely dispersed in saline or subsaline habitats and somewhat transitional in their floral structure between true *Aster* and the genus *Conyza*.¹ By some authors the section *Conyzopsis* is kept apart generically (as it once was by Asa Gray) from *Aster* as *Brachyactis*, characterized as a group of annuals with “rays not exceeding the mature pappus or none”;² but, as long ago pointed out by Asa Gray, the annual *A. subulatus* (generally maintained as an *Aster*, not a *Brachyactis*) “with its inconspicuous rays, hardly surpassing the disk and commonly surpassed by the mature pappus, and with its fewer disk-flowers, must be held to invalidate the genus *Brachyactis*.”³ The distinctness of *Brachyactis* as a genus is further menaced by the publication of such species as *B. hybrida* Greene, a plant said by its author to be “remarkable as a *Brachyactis* for its many long rays [about 1 cm. long], as well as by its apparently perennial duration; otherwise it is at perfect agreement with other members of this well marked genus.”⁴

¹ See Gray, Proc. Am. Acad. xvi. 99 (1880).

² Britton in Britton & Brown, Ill. Fl. ed. 2, iii. 348 (1913).

³ Gray, l. c.

⁴ Greene, Leaflets, i. 147 (1905).

Aster subulatus as it occurs on Nepisiguit Bay, isolated by many hundreds of miles of coast-line from the northern limit of continuous occurrence of the species, differs at a glance in its spatulate obtuse leaves; and in some other characters it departs from typical *A. subulatus* of the Atlantic Coast. Its strongly ascending branches bear few comparatively scattered heads; the involucre is more herbaceous, the bracts in some plants subequal; and the ligules more prominent than is common in *A. subulatus* and strongly inclined to be in only 1 row. These characters, if constant, would indicate a clearly marked species, but a close study of the available material shows that they are not absolute. The lower and median cauline leaves are usually fairly constant in their rounded apex but a few individuals from New Brunswick show acute or acuminate tips; the erect branching is exhibited by occasional small plants of otherwise good *A. subulatus*; the herbaceous involucre, though reasonably constant in the New Brunswick collections, is strongly approached by plants from the Boston district, and exceptional individuals of the New Brunswick series have the outer bracts as short as in typical *A. subulatus*; and the ligules, though longer in the New Brunswick plant than in most of the material from the Atlantic coast, are very closely approached in occasional plants from southern New England, where their length and number are variable. It seems to the writer, then, that the plant from Nepisiguit Bay is best treated as

ASTER SUBULATUS Michx., var. **obtusifolius**, n. var., foliis inferioribus mediisque spatulatis apice rotundatis vel obtusis; ramis arcte adscendentibus paucicapitatis; bracteis involucri plerumque subaequalibus exterioribus subherbaceis; ligulis 4–5 mm. longis pappum valde superantibus.

Lower and median leaves spatulate, rounded or obtuse at apex: branches strongly ascending, bearing few heads: involucre mostly subequal, the outer subherbaceous: ligules 4–5 mm. long, obviously exceeding the pappus.—NEW BRUNSWICK: abundant on sandy salt marsh at mouth of Nepisiguit (possibly Middle) River, Bathurst, July 25, 1902, *E. F. Williams & M. L. Fernald*; brackish marsh along Middle River, Bathurst, August 13, 1913, *S. F. Blake*, no. 5372 (TYPE in Gray Herb.).

EXPLANATION OF PLATE 109.

Fig. 1. *Aster laurentianus*, $\times 1$; fig. 2, marginal flower, $\times 5$; fig. 3, corolla of central flower, $\times 5$. Fig. 4. *A. laurentianus*, var. *magdalenensis*, $\times 1$. Fig. 5. *A. laurentianus*, var. *contiguus*, $\times 1$. Fig. 6. *A. subulatus*, var. *obtusifolius*, $\times 1$.

GRAY HERBARIUM.